

# Green Steel Market Set to Soar, Anticipated to Achieve \$50 Billion by 2035 | At 29.49% CAGR

*The Green Steel Market is projected to grow at a CAGR of 29.5% between 2025 and 2035, reaching a value of USD 50 billion by 2035*

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/EINPresswire.com/ -- In an era where environmental consciousness is at the forefront of industries worldwide, the demand for greener and more sustainable production methods is

higher than ever. One of the most promising innovations in the fight against climate change is green steel. Steel is a foundational material used across various industries, from construction and automotive to energy infrastructure and manufacturing. However, its traditional production methods are highly energy-intensive, with significant carbon emissions. Green steel offers a cleaner, more sustainable alternative that could revolutionize the steel industry and play a vital role in achieving global climate goals.



Green Steel Market

The [Green Steel Market](#) is poised for substantial growth, driven by increasing environmental regulations and rising demand from the automotive and construction sectors. The market size was estimated at 2.25 USD Billion in 2023 and is projected to reach 50 USD Billion by 2035, reflecting a compound annual growth rate (CAGR) of approximately 29.49% from 2025 to 2035.

## Understanding Green Steel

Green steel is a term used to describe steel produced using methods that significantly reduce carbon emissions compared to conventional production techniques. Traditional steelmaking relies heavily on blast furnaces, where iron ore is heated with coke (a form of coal) to produce molten iron. This process emits large amounts of [carbon dioxide](#) (CO<sub>2</sub>), which is a major contributor to global warming. In contrast, green steel production methods focus on minimizing or eliminating CO<sub>2</sub> emissions, making the production process more environmentally friendly.

There are two primary approaches to producing green steel: hydrogen-based reduction and electric arc furnaces (EAFs) powered by renewable energy. Both technologies aim to reduce reliance on fossil fuels and drastically lower carbon footprints in the steelmaking process.

## The Hydrogen-Based Reduction Process

One of the most promising methods for producing green steel is through hydrogen-based reduction. In this process, green hydrogen—hydrogen produced through the electrolysis of water using renewable energy sources such as wind or solar power—is used to replace coke as the reducing agent in the steel production process.

When hydrogen is used in place of coke, the chemical reaction produces water vapor (H<sub>2</sub>O) rather than carbon dioxide, making it an almost zero-emission process. This method is still in its early stages but holds immense potential for decarbonizing the steel industry. Several major steel producers, including SSAB in Sweden, Tata Steel in the Netherlands, and ArcelorMittal globally, are investing in hydrogen-based steel production technologies and building pilot plants to test and refine the process.

The use of green hydrogen is particularly significant because it is considered a renewable energy carrier. Hydrogen can be produced sustainably and, when used in steel production, eliminates one of the industry's largest sources of CO<sub>2</sub> emissions. However, the scalability of hydrogen-based steel production depends on the availability of green hydrogen at an affordable price, which remains a challenge. Governments and industries are working together to create policies and incentives that will drive down costs and increase the adoption of hydrogen-based steel production.

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## Electric Arc Furnaces Powered by Renewable Energy

Another pathway to green steel is through the use of electric arc furnaces (EAFs). EAFs are an alternative to blast furnaces and use electricity to melt scrap steel. The process is more energy-efficient and produces significantly fewer emissions. When powered by renewable energy sources, such as wind, solar, or hydroelectric power, EAFs become a highly sustainable method for producing steel.

EAFs can utilize scrap steel, which is already a valuable resource and helps reduce the need for virgin materials. By recycling steel, the demand for iron ore and coal is reduced, resulting in a lower environmental impact. Additionally, the use of renewable energy to power the furnaces further reduces the carbon footprint of steel production.

Many companies are increasingly turning to EAFs as they look to reduce their environmental impact. For example, companies like Nucor in the United States and Orsted in Denmark are leading the way in developing and scaling EAF technologies powered by renewable energy.

## The Benefits of Green Steel

The production of green steel offers several significant environmental and economic benefits.

The most notable advantage is the reduction in carbon emissions. According to estimates from the International Energy Agency (IEA), the steel industry is responsible for about 7-9% of global CO2 emissions. By transitioning to green steel production methods, the industry can significantly reduce its contribution to climate change.

In addition to reducing carbon emissions, green steel production could also lead to greater energy efficiency. Traditional steelmaking methods require large amounts of energy, much of which is derived from fossil fuels. In contrast, using hydrogen or renewable energy to power EAFs can make the steelmaking process more energy-efficient and less dependent on volatile fossil fuel markets.

Furthermore, the adoption of green steel technologies can drive job creation and economic growth. As the steel industry embraces green technologies, new skills and expertise will be required, leading to the creation of new jobs in research and development, manufacturing, and renewable energy infrastructure. This shift will not only benefit the environment but also local economies.

### Challenges to Scaling Green Steel

Despite its promise, the widespread adoption of green steel faces several challenges. One of the main obstacles is the cost. Green steel production methods, particularly hydrogen-based reduction, are still relatively expensive compared to conventional steelmaking. The infrastructure required for large-scale hydrogen production is also costly, and green hydrogen remains expensive due to limited supply and high production costs.

Another challenge is the availability of renewable energy. While many regions have abundant renewable resources, there is still a need for further investment in renewable energy infrastructure to meet the growing demand for green steel production. Additionally, the transition to renewable energy-powered electric arc furnaces requires significant upgrades to the electricity grid, which can be a logistical and financial challenge.

### The Road Ahead for Green Steel

The transition to green steel is not only necessary for the steel industry but also for meeting global climate targets. Governments, industry stakeholders, and consumers alike are increasingly aware of the need for sustainable production methods. As the cost of green technologies continues to fall and the availability of renewable energy increases, the widespread adoption of green steel is becoming more feasible.

The journey toward green steel will require continued collaboration between industry players, governments, and innovators. With the right policies, investments, and technological advancements, green steel could become the cornerstone of a more sustainable future for the steel industry and beyond.

### Key Companies in the Green Steel Market Include

Tata Steel  
Hyundai Steel  
POSCO  
Thyssenkrupp  
ArcelorMittal  
H2 Green Steel  
Steel Dynamics  
Nucor  
ClevelandCliffs  
SAIL  
SSAB  
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Green steel represents a pivotal shift toward sustainability in an industry that has long been a significant source of carbon emissions. While challenges remain, the potential environmental and economic benefits of green steel are immense. By adopting cleaner production methods such as hydrogen-based reduction and renewable energy-powered electric arc furnaces, the steel industry can play a critical role in reducing global carbon emissions and promoting a more sustainable world. The future of green steel looks promising, and with continued innovation and investment, it could soon become the standard in steel production.

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